

## ABSTRACT OF THE DISCLOSURE

In a writing system in which the linear velocity changes during a write operation, it is difficult to determine the writing waveform parameters for all possible speeds through test write operation. Therefore, some representative values must be used to estimate them. This means that it is necessary to enhance the accuracy of this estimation process. The present invention determines a condition for a high speed and an optimum write condition for a low speed through test write operation and obtains a condition for a middle speed based on a recommended value written on the disk. Especially, the present invention can waveform-convert the waveform parameter for a multi-pulse portion of a multi-pulse writing waveform without changing its energy to produce an accurate waveform parameter.